

Patent Abstracts of Japan

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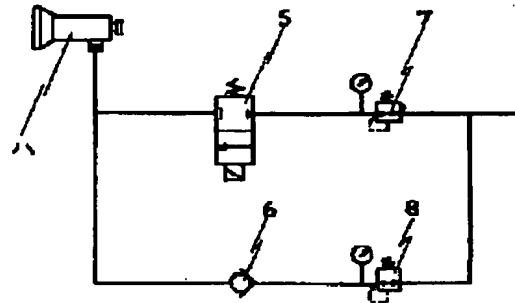
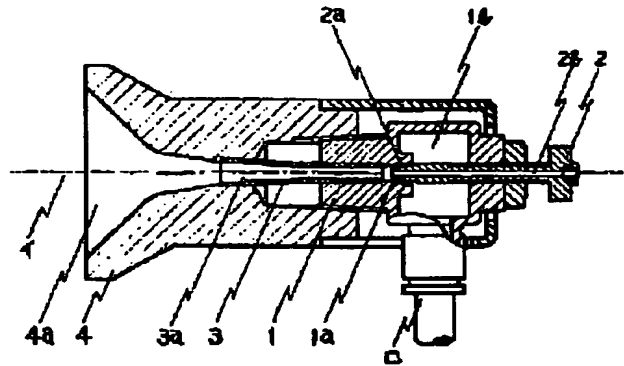
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INT.CL. : D03D 47/34

TITLE : APPARATUS FOR IMPARTING  
TENSION TO WARP YARN



ABSTRACT : PURPOSE: To impart a tension to warp yarns with controlling compressed air consumption by opening and closing a solenoid valve lying between an air tensor and a compressed air source corresponding to a crank angle.

CONSTITUTION: An air tensor C is so constructed to impart tension to a yarn A passing through an air flow made in a passing hole 3 by jetting a compressed air from a clearance formed with a conical hole 1a of a nozzle body 1 and a conical hole 2a of a nozzle 2. In a shuttleless loom, a solenoid valve 5 and a check valve 6 are piped in branch to the air tensor C having a yarn A through it and are connected to a compressed air source through a reduced pressure regulator for high tension 7 and that for low tension 8 respectively, and the solenoid valve 5 is so installed to open and close corresponding to a crank angel. When the solenoid valve 5 is opened, an air flow adjusted its pressure by the reduced pressure regulator for high tension 7 is supplied to the air tensor C to give tension to the yarn A and when the solenoid valve 5 is closed, a weak air flow adjusted its pressure by the reduced pressure regulator for low tension 8 is supplied to the air tensor C.

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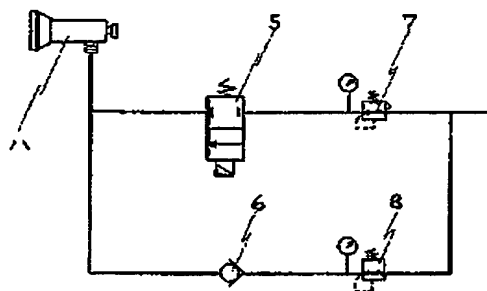
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(54)【発明の名称】 綿糸張力付加装置

(57)【要約】

【目的】 従来の固体摩擦を利用した張力付加装置の持つ、風綿や磨耗による張力の不安定を解消すべく空気流と糸による流体抵抗を利用し、かつ空気消費量を最小限とすべく配管システムを有する張力付加装置を提供することを目的とする

【構成】 円錐ノズルで創出された空気流中に綿糸を通過させて張力を付加するエアテンサと、縫機のクランク角度に対応して開閉する電磁弁を縫機1回転中の必要な期間だけ開となす配管システムを持つ綿糸張力付加装置。



## 【特許請求の範囲】

【請求項1】 シャットルレス織機において、ノズルボディ(1)の円錐穴(1a)とノズル(2)の円錐部(2a)で創出される円錐状隙間から圧縮空気を噴出して通路穴(3a)に空気流を発生させ、該空気流に糸を通過せしめて張力を与えるエアテンサ(ハ)が、クランク角と対応して開閉する電磁弁(5)に配管され、該電磁弁(5)は織機1回転中の必要な期間だけ開となることを特徴とする糸張力付加装置。

## 【発明の詳細な説明】

## 【001】

【産業上の利用分野】 本発明は、織機で製織する際に付走する緯糸に張力を付加する装置に関する。

## 【002】

【従来の技術】 シャットルレス織機においては、緯糸が付走する直前にワッシャー式、ゲート式、スプリング式等の糸張力付加装置を設置して、緯糸に張力を付加していたが、前記糸張力付加装置はすべて固体摩擦を原理としているため風綿の蓄積、摩擦部分の磨耗等に起因する糸張力の不安定状態が発生し、織物品質に悪影響を及ぼしていた。

## 【003】

【課題を解決するため手段】 本発明は、糸張力付加装置として、圧縮空気を利用して空気流を発生させ、該空気流中に緯糸を走らせて生ずる流体抵抗を利用して糸張力を付加し、かつ該空気流を張力付加が必要な時のみに発生させるようになって、空気消費量を最小限に止めることができる糸張力付加装置を提供することを目的とする。

## 【004】

【実施例】 図1において、ノズルボディ(1)の円錐穴(1a)にノズル(2)の円錐部(2a)がはまり込んで円錐状の隙間を創出し、ネジ結合を調節することにより前記円錐状隙間を自在に調整できるようになし、ノズルボディ(1)に嵌合されたノズルピース(3)の他端はテンサボディ(4)に嵌合され、圧縮空気が配管チューブ(ロ)から供給されてノズルボディ(1)の空気室(1b)に達し、前記円錐スキマを経て通路穴(3a)に噴出されて空気流を創出し、通路穴(4a)導かれて外部へ放散される。一方糸(イ)は通路穴(4a)から通路穴(3a)を通過して通路穴(2b)より外部へ抜け出して張力が付加されるようになってエアノズル(ハ)を構成する。

【005】 図2において、エアテンサ(ハ)は電磁弁(5)とチェックバルブ(6)に分岐して配管され、それぞれ高張力用減圧弁(7)と低張力用減圧弁(8)を介して圧縮空気供給源に接続される。電磁弁(5)は織機のクランク角度に対応して開閉する様になし、織機1回転中で高張力を要する期間だけ開き、それ以外の期間では閉となっている。ここで電磁弁(5)が開のときはエアテンサ(ハ)に高張力用減圧弁(7)で調圧された圧縮空気が流れ込み、強めの空気流を創出し、チェックバルブ(6)は低張力用回路への逆流を阻止している。電磁弁(5)が閉のときは、低張力用減圧弁(8)で調圧された圧縮空気がエアテンサ(ハ)に流れ込みやや弱い空気流を創出している。

【発明の効果】 上述のように、本発明は空気流中に糸を通して得られる流体抵抗を利用しているため、従来の固体摩擦を利用した張力付加装置が宿命的に持つ前述の欠点を解消できる。また、電磁弁をクランク角度と対応させて開閉させて、織機1回転中の必要時間だけ高張力用空気流を創出させることにより空気消費量を最小限におさえることが出来る。

## 【007】

## 【図面の簡単な説明】

【図1】 エアテンサの構造を示す正面断面図。

【図2】 本装置の配管システム図

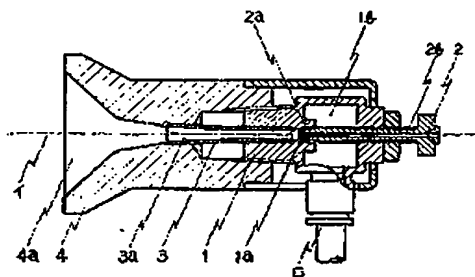
## 【符号の説明】

- 1 ノズルボディ
- 1a 円錐穴
- 1b 空気室
- 2 ノズル
- 2a 円錐部
- 2b 通路穴
- 3 ノズルピース
- 3a 通路穴
- 4 テンサボディ
- 4a 通路穴
- 5 電磁弁
- 6 チェックバルブ
- 7 高張力用減圧弁
- 8 低張力用減圧弁
- イ 糸
- ロ 配管チューブ
- ハ エアテンサ

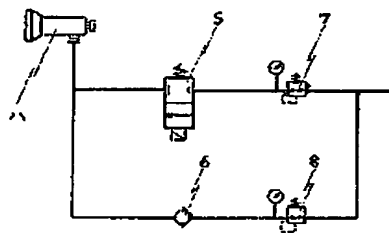
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【図1】



【図2】



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**DETAILED DESCRIPTION**

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[Detailed Description of the Invention]

[001]

[Industrial Application] This invention relates to the equipment which adds tension to the woof which \*\*\*\* in case weaving is carried out with a weaving machine.

[002]

[Description of the Prior Art] shuttle loess -- in the weaving machine, although yarn tension additional equipment, such as a washer type, a gate type, and a spring-loaded type, was installed just before the woof \*\*\*\*(ed), and tension was added to the woof, since solid friction was made into the principle, the unstable state of the yarn tension resulting from are recording of a cotton fly, wear of a friction part, etc. occurred, and said all yarn tension additional equipment had had the bad influence on textile quality.

[003]

It is means] in order to solve [technical problem. This invention generates airstream as yarn tension additional equipment using the compressed air, and adds yarn tension using the fluid resistance which runs the woof and is produced in this airstream, and makes it as [ generate / only when tension addition is required / this airstream ], and aims at offering the tension additional equipment which can stop air consumption to the minimum.

[004]

[Example] In drawing 1 , the cone section (2a) of a nozzle (2) gets into the cone hole (1a) of a nozzle body (1), and the clearance between conic is created. So that said cone-like clearance can be adjusted free by adjusting screw association Nothing, Fitting of the other end of the nozzle piece (3) by which fitting was carried out to the nozzle body (1) is carried out to the TENSA body (4). A compressed air is supplied from piping tube (\*\*), reaches the air chamber (1b) of a nozzle body (1), blows off in a path hole (3a) through said cone skimmer, creates airstream, is drawn a path hole (4a), and stripping is carried out outside. On the other hand, yarn (\*\*) is made as [ add / slip out of a path hole (2b) from a path hole (4a) to the exterior through a path hole (3a), and / tension ], and constitutes an air nozzle (Ha).

[005] In drawing 2 , air TENSA (Ha) branches to a solenoid valve (5) and a check valve (6), is piped, and is connected to a compressed-air source of supply through the reducing valve for high tension (7), and the reducing valve for low tensions (8), respectively. a solenoid valve (5) is opened and closed corresponding to whenever [ crank angle / of a weaving machine ] -- as -- nothing and a weaving machine -- the period which is 1 rotating and requires high tension -- opening -- the other period -- close and intermediary \*\*\*\*. When a solenoid valve (5) is open here, the compressed air whose pressure was regulated by air TENSA (Ha) with the pressure reducing pressure control valve for high tension (7) flowed in, stronger airstream was created and the check valve (6) has prevented the back flow to the circuit for low tensions. When a solenoid valve (5) is close, the compressed air whose pressure was regulated with the reducing valve for low tensions (8) flows into air TENSA (Ha), and a little weak airstream is created.

[Effect of the Invention] As mentioned above, since this invention uses the fluid resistance obtained through yarn in airstream, it can cancel the above-mentioned fault which the tension additional equipment using the conventional solid friction has fatally. moreover, a solenoid valve is made to correspond with whenever [ crank angle ], and is opened and closed -- making -- a weaving machine

-- when only the need time amount under 1 rotation makes the airstream for high tension create, air consumption can be pressed down to the minimum.  
[007]

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CLAIMS

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[Claim(s)]

[Claim 1] In a weaving machine, blow off the compressed air from the cone-like clearance created in the cone section (2a) of the cone hole (1a) of a nozzle body (1), and a nozzle (2), and a path hole (3a) is made to generate airstream. shuttle loess -- air TENSA (Ha) which this airstream is made to pass yarn and gives tension pipes the solenoid valve (5) opened and closed corresponding to a crank angle -- having -- this solenoid valve (5) -- a weaving machine -- the woof tension additional equipment characterized by only the required period under 1 rotation serving as open.

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**DESCRIPTION OF DRAWINGS**

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[Brief Description of the Drawings]

[Drawing 1] The transverse-plane sectional view showing the structure of air TENSA.

[Drawing 2] The piping system chart of this equipment

[Description of Notations]

1 Nozzle Body

1a Cone hole

1b Air chamber

2 Nozzle

2a Cone section

2b Path hole

3 Nozzle Piece

3a Path hole

4 TENSA Body

4a Path hole

5 Solenoid Valve

6 Check Valve

7 Reducing Valve for High Tension

8 Reducing Valve for Low Tensions

\*\* Yarn

\*\* Piping tube

\*\* Air TENSA

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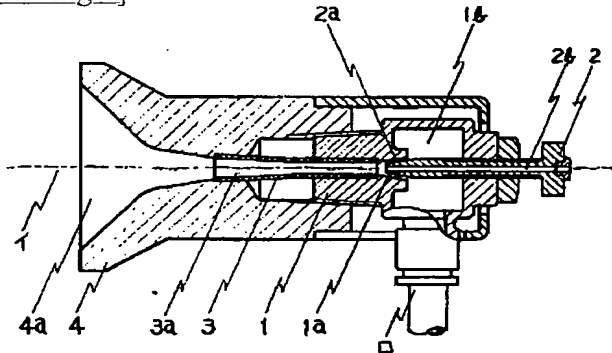
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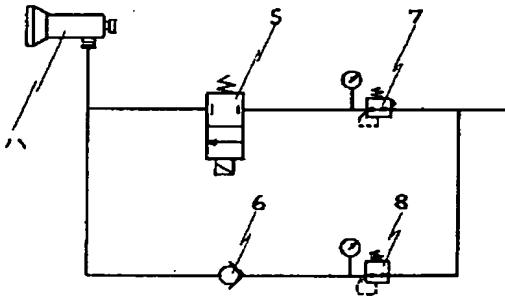
DRAWINGS

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[Drawing 1]



[Drawing 2]




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